WHAT IS CLAIMED IS:

1. A method of inhibiting human telomerase activity comprising the step of contacting human telomerase with a polynucleotide comprising an antisense sequence of at least 7 nucleotides that specifically hybridizes to a nucleotide sequence within an accessible region of the RNA component of a human telomerase ("hTR"), but that does not hybridize to a sequence within a template region of the human telomerase, wherein the sequence within an accessible region is a sequence selected from nucleotides 137-193, 290-319, and 350-380 of hTR, whereby the polynucleotide inhibits the activity of the telomerase.

2. The method of claim 1 wherein the antisense sequence is between 10 and 50 nucleotides in length.

3. The method of claim 1 wherein the antisense sequence is between 15 and 35 nucleotides in length.

4. The method of claim 1 wherein the step of providing the cell with the polynucleotide comprises transfecting the cell with an expression vector comprising expression control sequences operatively linked to a nucleotide sequence encoding the antisense polynucleotide which vector expresses the polynucleotide.

5. The method of claim 1 wherein the cell is a cancer cell.

6. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and:

(1) a polynucleotide comprising an antisense sequence of at least 7 nucleotides that specifically hybridizes to a nucleotide sequence within an accessible region of the RNA component of a human telomerase ("hTR"), but that does not hybridize to a sequence within a template region of the human telomerase, wherein the sequence within an accessible region is a sequence selected from nucleotides 137-193, 290-319, and 350-380 of hTR, or

(2) an expression vector comprising expression control sequences operatively linked to a nucleotide sequence encoding the polynucleotide which vector expresses the polynucleotide.

7. A method of treating a telomerase-related condition involving cells exhibiting telomerase activity in a subject comprising the step of administering to the subject a pharmaceutical composition in an amount effective to inhibit telomerase activity in the cells, wherein the pharmaceutical composition comprises a pharmaceutically acceptable carrier and:

(1) a polynucleotide comprising a sequence of at least 7 nucleotides that specifically hybridizes to a nucleotide sequence within an accessible region of the RNA component of a human telomerase ("hTR"), but that does not hybridize to a sequence within a template region of the human telomerase, wherein the sequence within an accessible region is a sequence selected from nucleotides 137-193, 290-319, and 350-380 of hTR, or

(2) an expression vector comprising expression control sequences operatively linked to a nucleotide sequence encoding the polynucleotide which vector expresses the antisense polynucleotide,

whereby inhibiting telomerase activity in the cells provides the treatment of the condition.

8. The method of claim 7 wherein the telomerase-related condition is cancer and inhibition of telomerase activity in the cancer cells inhibits the growth of the cancer.

9. The method of claim 7 wherein the pharmaceutical composition is an injectable solution administered by injection.

10. The method of claim 7 wherein the pharmaceutical composition comprises the polynucleotide.

11. The method of claim 7 wherein the pharmaceutical composition comprises the expression vector.

12. A polynucleotide comprising an antisense sequence of at least 7 nucleotides that specifically hybridizes to a nucleotide sequence within an accessible region of the RNA component of a human telomerase ("hTR"), but that does not hybridize to a sequence within a template region of the human telomerase, wherein the

sequence within an accessible region is a sequence selected from nucleotides 137-193, 290-319, and 350-380 of hTR.

13. The polynucleotide of claim 12 wherein the sequence is between 10 and 50 nucleotides in length.

14. The polynucleotide of claim 12 wherein the sequence is between 15 and 35 nucleotides in length.

15. The polynucleotide of claim 12 whose sequence consists essentially of the sequence within the an accessible region.

16. The polynucleotide of claim 12 comprising DNA or RNA.

17. The polynucleotide of claim 12 comprising a nucleotide analog selected from phosphorothioates, phosphoramidates, methyl phosphonates, chiral-methyl phosphonates, 2-O-methyl ribonucleotides and peptide-nucleic acids.

18. The polynucleotide of claim 12 further comprising an inhibitory moiety.

19. The polynucleotide of claim 12 wherein the sequence is complementary to the nucleotide sequence within an accessible region.

20. The polynucleotide of claim 12 which is at most 50 nucleotides long.

21. The polynucleotide of claim 12 of less than about 50 nucleotides in a sequence that specifically hybridizes to an accessible region of the RNA component of telomerase.

22. The polynucleotide of claim 12 whose nucleotide sequence is selected from the group consisting of:

CGT TCC TCT TCC TGC GGC CTG AAA CGG TGA (SEQ ID NO:2)

CGT TCC TCT TCC TGC GGC CT (SEQ ID NO:3)
CGT TCC TCT TCC (SEQ ID NO:4)
CTG ACA GAG CCC AAC TCT TCG CGG TGG CAG (SEQ ID NO:5)
CTG ACA GAG CCC AAC TCT TC (SEQ ID NO:6)
CCA ACT CTT CGC GGT GGC AG (SEQ ID NO:7)
GCT CTA GAA TGA ACG GTG GAA GGC GGC AGG (SEQ ID NO:8)
GCT CTA GAA TGA ACG GTG G (SEQ ID NO:9)
GCT CTA GAA TGA ACG (SEQ ID NO:10)
GCT CTA GAA TG (SEQ ID NO:11)
GCT CTA G (SEQ ID NO:12)
CAT TTT TTG TTT GCT CTA GA (SEQ ID NO:13) and
CGG GCC AGC AGC TGA CA (SEQ ID NO:14).

23. An expression vector comprising a recombinant polynucleotide comprising expression control sequences operatively linked with a nucleotide sequence encoding a polynucleotide comprising an antisense sequence of at least 7 nucleotides that specifically hybridizes to a nucleotide sequence within an accessible region of the RNA component of a human telomerase ("hTR"), but that does not hybridize to a sequence within a template region of the human telomerase, wherein the sequence within an accessible region is a sequence selected from nucleotides 137-193, 290-319, and 350-380 of hTR.

24. The expression vector of claim 23 wherein the expression control sequences comprise a promoter selected from the metallothionein promoter, the constitutive adenovirus major late promoter, the dexamethasone-inducible MMTV promoter, the SV40 promoter, the MRP polIII promoter, the constitutive MPSV promoter, the tetracycline-inducible CMV promoter (such as the human immediate-early CMV promoter), and the constitutive CMV promoter.

25. The expression vector of claim 23 wherein a viral vector or a plasmid vector comprising the recombinant polynucleotide.

26. The expression vector of claim 25 wherein the vector is a plasmid vector contained in a liposome.

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